BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the	)	
Commission's Rules to Allocate	)	
Additional UHF Spectrum for the	)	RM-
Private Land Mobile Radio	)	
Services in Iowa, Nebraska,	)	
Minnesota, North Dakota and	)	
South Dakota	)	

TO: The Commission

PETITION FOR RULE MAKING

THE SPECIAL INDUSTRIAL RADIO
SERVICE ASSOCIATION, INC.

Mark E. Crosby
President and Managing Director

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SUMMARY

The Special Industrial Radio Service Association, Inc. (SIRSA) requests that the Federal Communications Commission initiate a rule making proceeding to amend Part 90 of the Commission's Rules to allocate additional UHF spectrum for the use of Special Industrial Radio Service eligibles and other Part 90 users in the states of Iowa, Nebraska, Minnesota, North Dakota, and South Dakota.

A number of compelling factors have led SIRSA to conclude that an additional allocation of spectrum is necessary, at this time, in order to provide an impetus for greater efficiency in the agricultural operations in these states. First, the dramatic rise in agricultural productivity that has occurred over the past 30 years, known as the "Green Revolution," has come to an end, with the result that farmers are struggling to feed a ballooning population. Second, as an off-shoot of the end of the Green Revolution, future leaps in productivity resulting from improved technology are far less likely. Third, there is a need for significant increases in spectrum to serve the needs of the farming community. Finally, there appears to be an abundance of UHF-TV channels which are not being used in the five aforementioned states, and which could be easily con-

verted to land mobile use without jeopardizing the prospects for implementation of advanced broadcast television technologies.

Therefore, SIRSA proposes that the frequency band 494-500 MHz (UHF-TV Channel 18) be allocated for land mobile use under Part 90 in Minnesota, Nebraska, North Dakota and South Dakota. In addition, to provide for additional UHF land mobile channels in Iowa, SIRSA proposes that the frequency band 500-506 MHz (UHF-TV Channel 19) be allocated for land mobile use in that state. The allocation of an additional 6 megahertz of land mobile spectrum in these states would provide the opportunity for use of an additional 120 land mobile channels pairs having bandwidths of 25 kHz.

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Amendment of Part 90 of the Commission's Rules to Allocate Additional UHF Spectrum for the Private Land Mobile Radio Services in Iowa, Nebraska, Minnesota, North Dakota and South Dakota	)	**RM-**

TO: The Commission

PETITION FOR RULE MAKING OF THE SPECIAL INDUSTRIAL RADIO SERVICE ASSOCIATION, INC.

This Petition for Rule Making is filed pursuant to the provisions of Section 1.401 by the Special Industrial Radio Service Association, Inc. ("SIRSA"). For the reasons set forth herein, the Commission is respectfully requested to institute a new rule making proceeding looking toward the amendment of Part 90 of the Rules to allocate additional UHF spectrum for the use of Special Industrial Radio Service eligibles and other Part 90 users in the states of Iowa, Nebraska, Minnesota, North Dakota and South Dakota.

I. PRELIMINARY STATEMENT

1. Encouraging the efficient and compatible use of the electromagnetic spectrum has been a continuing concern

of SIRSA since its inception.1/ SIRSA has been the petitioner responsible for initiating many key proceedings that have improved the utility of the spectrum and promoted the use of radio communications in American industry. SIRSA was selected as the sole coordinator for the Special Industrial Radio Service in 1986 because of its representativeness, expertise and experience.

2. SIRSA believes that the instant Petition for Rule Making identifies a further opportunity to make efficient and effective use of the electromagnetic spectrum to promote the public interest. SIRSA has identified numerous UHF-TV channels that are currently unutilized in the states of Iowa, Nebraska, Minnesota, North Dakota and South Dakota. It is SIRSA's view that the public interest would be served by allocating, for each of the foregoing states, six megahertz of spectrum for use by the agricultural sector of American industry, other Special Industrial Radio Service eligibles, and Part 90 radio users in general.

1/ SIRSA was certified as the frequency coordinator for the Special Industrial Radio Service in the Commission's Report and Order (FCC 86-143) in PR Docket No. 83-737, adopted April 3, 1986, summary published at 51 Fed. Reg. 14,993 (April 22, 1986).

II. BACKGROUND

3. The "Green Revolution," Business Week magazine has proclaimed, is over.[2/] The term "Green Revolution" was coined to characterize the dramatic rise in agricultural productivity that occurred over the past 30 years and was, in Business Week magazine's view, "a modern miracle." For instance, during the period between 1950 and 1985, U.S. corn yields doubled. It was during the Green Revolution, that scientists developed hybrid strains of rice, corn, and wheat that, combined with liberal doses of fertilizers, herbicides and pesticides, caused crop yields to skyrocket. At this point, however, experts are in general agreement that society has all but exhausted the Green Revolution's potential for dramatic increases in worldwide production of grain.

4. In the past year, the production of grain in the United States has fallen 25%, the first time that production has failed to meet the existing demand since records on such indicia have been maintained. Again, according to Business Week, the wheat reserves in the United States "will have nose-dived to 533 million bushels by May 1989, down from 1.8 billion bushels in 1987 and well below the 800

2/ Business Week magazine, April 3, 1989, p. 106.

million bushels which the Agricultural Department considers a safe margin."[3/] It is well apparent that a number of factors, including environmental considerations such as loss of precious topsoil and a lack of fresh water, are imposing powerful constraints on agricultural productivity.

5. In this environment, it becomes crucial that the agricultural sector take advantage of whatever potential improvements there may be in production and technology to foster greater efficiencies in the industry. SIRSA is of the opinion that, given the constraints imposed by the existing shortages of spectrum in the Farm Belt and particularly in the states of Iowa, Nebraska, Minnesota, North Dakota and South Dakota, the allocation of additional UHF spectrum for land mobile purposes would help to improve the plight of farmers and play a role in helping to counteract the "downside" of the Green Revolution. For this reason, as detailed below, SIRSA proposes in this Petition for Rule Making, to allocate an additional six megahertz of UHF spectrum in the above-mentioned states for land mobile usage.

3/ Id., p. 107.

III. PETITION FOR RULE MAKING

A. THE TIME IS RIGHT FOR AN ADDITIONAL ALLOCATION OF UHF SPECTRUM TO SERVE THE AGRICULTURAL SECTOR.

6. Several very compelling factors lead SIRSA to conclude that the time is right for an additional allocation of UHF spectrum to serve the needs of the farming community and other Part 90 users in the five states to which this Petition is directed. First, as noted above, the potential of the Green Revolution, which has produced meteoric rises in food production for the past three decades, has been exhausted. Second, environmental factors are seriously constraining the potential for further improvements in agricultural productivity, with the result that farmers are struggling to feed a ballooning population. Third, it is estimated that American farmers, in an effort to compensate for the shortfall in production, will plant 12% more acres during 1989 than during the previous year. Fourth, as an offshoot of the end of the Green Revolution, future leaps in productivity resulting from improved technology are far less likely. Fifth, from the perspective of spectrum utilization, there is a need for significant increases in spectrum to serve the needs of the farming community and, by and large, the 800/900 MHz land mobile bands are not an attrac-

tive alternative for serving this need. Finally, there appears to be an abundance of UHF-TV channels which are lying fallow in the states of Iowa, Nebraska, Minnesota, North Dakota and South Dakota. It is SIRSA's observation that these channels could easily be converted to land mobile use without jeopardizing the prospects for implementation of advanced broadcast television (ATV) technologies.

B. THERE IS SEVERE CONGESTION ON LAND MOBILE FREQUENCIES BELOW 800 MHZ IN AGRICULTURAL STATES.

7. As Appendix IV to this Petition, SIRSA has documented the existing utilization of the land mobile bands in the five states to which this Petition is directed. The statistics show that there is an extraordinary number of licensed systems in the land mobile radio bands allocated below 800 MHz. The congestion is particularly pronounced in the 150 MHz land mobile band, where there is a combined total of more than 7,000 licensed systems in operation throughout the five states on the frequencies allocated to the Special Industrial Radio Service. The statistics also show that utilization decreases markedly as one moves to frequencies higher in the spectrum. Thus, for example, while there are more than 1,000 systems licensed on the

450 MHz Special Industrial Radio Service frequencies, there are less than 30 such systems at 800 MHz.

8. Historically, land mobile users in the Midwestern plains states and farmers, in particular, have found the 800 MHz band to be impractical for satisfying their land mobile radio communication requirements. The plains states afford few naturally elevated sites that can be used for 800 MHz antennas and, without elevated antenna sites, 800 MHz frequencies cannot provide adequate coverage to satisfy farmers' needs. Faced with recent droughts and a lagging agricultural economy, farmers simply are not positioned to make substantial investments in 800 MHz radio systems when the coverage provided by such systems is inadequate for their needs.[4/] Farmers must, of necessity, rely on proven technology employing frequencies which assure proven coverage areas that will be sufficiently useful. The factors militating against use of the 800 MHz band in Iowa, Nebraska, Minnesota, North Dakota and South Dakota are reflected in the very sparse number of 800 MHz systems shown in Appendix IV.

4/ At 800 MHz, the price of a single mobile unit is in the range of $1,300 to $1,400, when licensees purchase mobile units in relatively large quantities. The price of a single mobile unit at 450-512 MHz tends to be no more than $500, on average.

9. For these reasons, farmers and other private land mobile radio users in the plains states continue to resort to the frequencies at 150 MHz and 450 MHz to satisfy their requirements. In times past, the geographic separation between co-channel land mobile base stations at 450 MHz routinely measured in excess of 50 miles, affording a comfortable degree of protection between systems. With such separation, the likelihood of co-channel interference between systems and of mobile units interacting with the wrong base station was extremely remote. In the past decade, however, the co-channel separation between systems at 450 MHz has, of necessity, been reduced to a maximum of 20 to 30 miles.

10. A geographic separation of 20 to 30 miles is, on the one hand, essential to accommodate the ever increasing demand for land mobile radio communications. On the other hand, however, such separation is simply too close to allow for efficient use of the frequencies. With separations of less than 30 miles between co-channel systems, there is a near-intolerable level of misdirected base-to-mobile communications, even with the use of tone squelch and other techniques. Equally important, communications are

subject to random interference, which poses a severe impediment to normal communications traffic.

C. THERE IS AN ABUNDANCE OF UHF-TV SPECTRUM AVAILABLE TO SATISFY BROADCASTERS' REQUIREMENTS.

11. The statistics provided at Appendix IV reflect the reality that, for the type of terrain, coverage area, economic and environmental factors prevalent in the states under consideration, the frequencies below 800 MHz remain the only real choice for effective land mobile communications. These statistics also point up the severe congestion facing private land mobile radio licensees at 150 MHz and 450 MHz. Conversely, SIRSA's examination of the existing Table of Allotments (Section 73.606 of the Commission's rules) for UHF-TV channels leads to the firm conclusion that there are more UHF-TV channels available in these areas than are necessary to serve the needs of the broadcast television industry. SIRSA finds, for example, that in the states of North Dakota and South Dakota, very few of the UHF-TV channels above Channel 27 (548-554 MHz) are allotted for broadcast purposes. In the states of Iowa, Nebraska and Minnesota, very few of the UHF-TV channels above Channel 49 (680-686 MHz) are allotted. Overall, for the 56 UHF-TV channels, Channel 14 to Channel 69 inclusive, only three of every ten

channels, on average, are actually allotted for use in each individual state under consideration.5/ The implication of this data, in SIRSA's view, is that there is clearly sufficient UHF-TV spectrum available to accommodate both the needs of the farmers for additional land mobile channels and the needs of the advanced television industry and broadcasters in general.

12. SIRSA has examined the utilization and allotment of UHF-TV Channels 18 (494-500 MHz) and 19 (500-506 MHz) in the five states under consideration. According to available data, Channel 18 is neither allotted nor used anywhere within the states of Nebraska, North Dakota and South Dakota. Channel 19 is neither allotted nor used in the state of Iowa.6/ Additionally, for the state of Minnesota, Channel 18 is allotted for use only in Hibbing, Minnesota, located in the far northeastern part of the State; this channel is allotted for non-commercial educational broadcast purposes in Hibbing but is currently not utilized,

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5/ Even fewer UHF-TV channels are actually assigned for use in these five states. Collectively, for channels 14 through 69 inclusive, there are approximately 30 UHF-TV stations actually authorized in the five states.

6/ Sources consulted included Section 73.606 of the Commission's rules (Table of Allotments), TV and Cable Factbook (1989 Edition) and the Commission's March 10, 1989 Public Notice on Television Channel Utilization as of the end of calendar year 1988.

according to Commission records. Otherwise, Channel 18 is not allotted in any other portion of Minnesota. Having considered these facts, SIRSA concludes that allocation of an additional six megahertz of UHF spectrum would be feasible in the states of Iowa, Nebraska, Minnesota, North Dakota and South Dakota for land mobile use in general and, in particular, to serve the needs of the agricultural sector. SIRSA therefore proposes that the frequency band 494-500 MHz (UHF-TV Channel 18) be allocated for land mobile use under Part 90 in the states of Nebraska, Minnesota, North Dakota and South Dakota.7/ To provide for additional UHF land mobile channels in Iowa, SIRSA proposes that the frequency band 500-506 MHz (UHF-TV Channel 19) be allocated for land mobile use in that state.

D. SIX MEGAHERTZ OF SPECTRUM WOULD PROVIDE MUCH-NEEDED RELIEF FOR FARMERS AND OTHER PART 90 USERS.

13. The allocation of an additional six megahertz of land mobile spectrum in the five aforementioned states

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7/ SIRSA recognizes that a very minor portion of southeastern Minnesota may fall within the Area of Dominant Influence (ADI) of Station WQOW-TV, operating on channel 18 in Eau Claire, Wisconsin and providing service to La Crosse-Eau Claire, Wisconsin. SIRSA believes that established technical standards governing land mobile operations in the band 470-512 MHz should provide adequate protection, to the extent necessary, for the operations of Station WQOW-TV.

would provide the opportunity for use of an additional 120 land mobile channel pairs having bandwidths of 25 kHz. This additional spectrum would provide a much needed impetus for the introduction of future efficiencies in agricultural operations in these states. As depicted in Appendix II to this Petition, SIRSA proposes that 75 of the 120 channel pairs be allocated directly to the Special Industrial Radio Service (Section 90.73)[8/] and that the remaining 45 channel pairs be allocated to a "General Access Pool" that would be available to other entities eligible under Part 90. With this allocation, the Commission would be taking a very positive step to satisfy an existing need of significant proportions without any adverse consequence to the bonafide needs of the broadcasting service.

E. THE PROPOSED ALLOCATION WOULD PROMOTE THE COMMISSION'S GOAL OF IMPLEMENTING FLEXIBILITY IN SPECTRUM UTILIZATION.

14. One of the fundamental thrusts of Commission policy during the past decade has been an increased reliance on flexible allocation arrangements designed to enhance the

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8/ Existing note 20 in Section 90.73 is sufficiently broad in its reference to Subpart L (Authorizations in the Band 470-512 MHz) to encompass the proposed change. Therefore, no specific amendment to Section 90.73 is being proposed in Appendix I.

public benefit by accommodating diverse but compatible communications requirements within the same range of radio frequencies. Examples abound of policy decisions reached by the Commission in which more flexible use of the radio spectrum served as a primary impetus for significant allocation decisions. Motivated by the concern for improving spectrum utilization through a more flexible allocation scheme, the Commission has made 50 frequency pairs from the spectrum allocated to the Private Land Mobile Radio Services available for the Basic Exchange Telecommunications Radio Service (BETRS) outside the top 54 urban centers.[9/] Similarly, the Commission has recently implemented a flexible allocation scheme for the frequency bands 932-935 MHz and 941-944 MHz, under which both federal government agencies as well as non-government users in the private radio and common carrier services will have equal access to this spectrum for point-to-point and point-to-multipoint use.[10/]

15. SIRSA believes that the instant Petition will foster the Commission's goal of introducing greater flexibility into use of the radio spectrum, without adverse con-

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9/ Report and Order (FCC 87-387), CC Docket No. 86-495, adopted December 10, 1987, 3 FCC Rcd 214 (1988).

10/ Second Report and Order, Gen. Docket No. 82-243, released February 28, 1989, 47 Fed. Reg. 10,326 (March 13, 1989).

sequences for the American public. Even with the proposed allocation of 6 megahertz of spectrum for private land mobile radio use, there will remain an abundance of spectrum to satisfy even the most grandiose plans for advanced television technologies, as well as other bona fide requirements of the broadcast industry. SIRSA's proposal would affect less than two percent of the UHF-TV spectrum resources in a very limited number of states, which are predominantly rural in nature. Thus, the Petition is conspicuously limited in scope, and the consequences for the broadcast industry are of negligible proportions. Under these circumstances, SIRSA believes that the proposed rule changes are clearly in the public interest and merit prompt consideration by the Commission.

F. THE PUBLIC INTEREST WOULD BE SERVED BY APPLICATION OF EXISTING TECHNICAL STANDARDS TO THE PROPOSED ALLOCATION.

16. SIRSA believes that the public interest would best be served by applying the existing technical constraints and standards for the 470-512 MHz band to the proposed allocation. For reasons of efficiency and compatibility, SIRSA proposes that the frequencies be assigned in standard 25 kHz bandwidths for both mobile and base stations transmissions. Similarly, SIRSA's proposal contemplates a

separation of 3 MHz between base station and mobile transmit frequencies. This spacing is consistent with the existing operations at 470-512 MHz and would permit existing equipment to be used on the proposed channels. SIRSA would apply the same power limitations to this proposed allocation as now applied to operations in the 470-512 MHz band (Section 90.309). SIRSA believes that other technical standards applicable to existing operations at 470-512 MHz in the 13 metropolitan areas specified in Section 90.303 would be generally applicable to this proposed allocation and therefore the proposal could be adopted without substantially amending or adding to existing technical standards. The frequency loading criteria set forth in Section 90.313 could also be applied to this proposed allocation without any need for modification.

IV. CONCLUSION

17. The current allocation of spectrum at 30 MHz, 150 MHz and 450 MHz has proved inadequate to meet the land mobile radio needs of the farming community in the states of Iowa, Minnesota, Nebraska, North Dakota and South Dakota. There is a compelling need for additional frequencies to satisfy the ordinary business communications of farmers in these states and enable the farmers to continue ongoing

efforts to improve the efficiency of their operations. In the past decade, the co-channel separation distances between land mobile systems in these states has been constricted from 50 miles or better to a present day norm of 20 to 30 miles. With this reduction in co-channel distances, the licensed systems have become more vulnerable to harmful interference and reception of extraneous signals. It is SIRSA's firm conviction that the only remedy for this situation is the allocation of additional land mobile channels below 800 MHz.

18. As discussed above, 800 MHz frequencies are simply not adequate to serve the needs of the farm community. The terrain of the plains states is such that there are very few elevated sites useful for 800 MHz antennas. Consequently, the coverage derived from 800 MHz systems is not sufficient to justify the cost involved. For this reason and other related technical factors, licensees in the Special Industrial Radio Service have not been able to make any noticeable use of 800 MHz and will continue to avoid using this band in the future. Conversely, there is a surplus of UHF-TV spectrum available in these states that could be used for land mobile operations. The relatively sparse populations in these states necessarily dictates that spectrum allocated for broadcasting use will certainly continue to

lie fallow in the future unless allocated for other purposes.

19. SIRSA therefore believes that the public interest would be served by allocation of a single UHF-TV channel in the states of Iowa, Minnesota, Nebraska, North Dakota and South Dakota to satisfy the existing demand for land mobile service among the agricultural sector and other Part 90 eligibles. SIRSA proposes that Channel 18 be dedicated for use under Part 90 in the states of Minnesota, Nebraska, North Dakota and South Dakota. Similarly, SIRSA urges the Commission to allocate Channel 19 for private land mobile radio use in Iowa. SIRSA believes that this allocation of spectrum could be made without adverse impact on the UHF-TV broadcasting service or prospects for advanced TV technologies and with very positive impact on users in the agricultural sector. For this reason, SIRSA respectfully urges the Commission to consider the allocation proposed in the instant Petition for Rule Making.

WHEREFORE, THE PREMISES CONSIDERED, the Special Industrial Radio Service Association, Inc. hereby respectfully requests that the Federal Communications Commission institute a rule making proceeding to allocate spectrum to the Special Industrial Radio Service and a General Access

Pool under Part 90 as proposed in Appendix I of this Petition.

Respectfully submitted,

THE SPECIAL INDUSTRIAL RADIO SERVICE ASSOCIATION, INC.

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APPENDIX I

IT IS PROPOSED THAT PART 90 OF THE COMMISSION'S RULES AND REGULATIONS BE AMENDED AS FOLLOWS.

1. Section 90.303 is amended by adding a new paragraph (b):

§90.303 Availability of frequencies.

* * * * *

(b) Frequencies in the band 470-512 MHz are available for assignment in the states listed below. The specific frequencies available to each radio service are listed in § 90.311.

Frequency Availability for Land Mobile Use

State	Channel	Frequencies (megahertz)
Iowa	19	500-506 MHz
Minnesota	18	494-500 MHz
Nebraska	18	494-500 MHz
N. Dakota	18	494-500 MHz
S. Dakota	18	494-500 MHz

2. Section 90.311 is amended by adding a new paragraph (c):

§ 90.311 Frequencies.

* * * * *

(c) The following frequencies in the band 470-512 MHz may be assigned to eligibles in the services indicated below. The first and last assignable frequencies are shown. Assignable frequencies occur in increments of 25 kHz. The separation between base and mobile transmit frequencies is 3 MHz for two frequency operations.

Frequencies Assigned in Service Pools

State (Channel Assignment)	Special Industrial Radio Service		General Access Pool	
	Base and Mobile	Mobile	Base and Mobile	Mobile
Iowa Ch. 19	500.0125 to 501.8625	503.0125 to 504.8625	501.8875 to 502.9875	504.8875 to 505.9875
Minnesota Ch. 18	494.0125 to 495.8625	497.0125 to 498.8625	495.8875 to 496.9875	498.8875 to 499.9875
Nebraska Ch. 18	494.0125 to 495.8625	497.0125 to 498.8625	495.8875 to 496.9875	498.8875 to 499.9875
N. Dakota Ch. 18	494.0125 to 495.8625	497.0125 to 498.8625	495.8875 to 496.9875	498.8875 to 499.9875
S. Dakota Ch. 18	494.0125 to 495.8625	497.0125 to 498.8625	495.8875 to 496.9875	498.8875 to 499.9875

APPENDIX II

PROPOSED CHANNELING ARRANGEMENT

I. Channel Pairs Proposed for Special Industrial Radio Service Use: States of Minnesota, Nebraska, N. Dakota and S. Dakota (Channel 18)

Base and Mobile	Mobile
494.0125	497.0125
494.0375	497.0375
494.0625	497.0625
494.0875	497.0875
494.1125	497.1125
494.1375	497.1375
494.1625	497.1625
494.1875	497.1875
494.2125	497.2125
494.2375	497.2375
494.2625	497.2625
494.2875	497.2875
494.3125	497.3125
494.3375	497.3375
494.3625	497.3625
494.3875	497.3875
494.4125	497.4125
494.4375	497.4375
494.4625	497.4625
494.4875	497.4875
494.5125	497.5125
494.5375	497.5375
494.5625	497.5625
494.5875	497.5875
494.6125	497.6125
494.6375	497.6375
494.6625	497.6625
494.6875	497.6875
494.7125	497.7125
494.7375	497.7375
494.7625	497.7625
494.7875	497.7875
494.8125	497.8125
494.8375	497.8375
494.8625	497.8625
494.8875	497.8875
494.9125	497.9125
494.9375	497.9375
494.9625	497.9625
494.9875	497.9875